OPTIMIZING PREVENTIVE MAINTENANCE ON SHIPPING PUMP WITH GENETIC ALGORITHM IN JOINT OPERATING BODY PERTAMINA-PETROCHINA EAST JAVA (JOB P-PEJ) SOKO – TUBAN

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Abstract
The process of shipping crude oil from Central Processing Area (CPA) into Floating Storage Offloading (FSO) requiring shipping pump unit with very high head. Based on manual operation from vendor, maintenance strategy that recommended for shipping pump unit is Preventive Maintenance (PM). But, because it reputed less efficient, so operator become cutting or not executing PM with short interval. From Overall Equipment Effectiveness analysis which has been made indicating that the effort for upgrading efficiency of PM activities with cutting PM activities which should be do exactly causing performance quality become not maximal.

In this research made optimizing Preventive Maintenance (PM), on shipping pump PP-8400B in the CPA JOB P-PEJ with Genetic Algorithm (GA). The core of this optimization will be executed PM simultaneously on the racor fuel filter, fuel filter separator, coolant filter, and air filter, but with different PM activities for minimizing total cost maintenance and maximizing reliability of system. So, obtainable PM which more efficient without must reducing its performance quality.

The result of this research show that optimizing can be economized total cost maintenance of racor fuel filter 16.41% and fuel filter separator 26.77% during 1500 hours. On the other hand, the lowest reliability of system obtainable 0.7151 and for
each component obtainable 0.9158 for racor fuel filter, 0.9035 for fuel filter separator, 0.8995 for coolant filter, and 0,8262 for air filter.

**Keywords:** Preventive maintenance, genetic algorithm, racor fuel filter, fuel filter separator, coolant filter, air filter, reliability, and total cost maintenance.